

General Chemistry Lab

Course Text/Materials

Custom Lab Kit from [eScienceLabs.com](https://www.esciencelabs.com) (please register at eScienceLabs, login, and use the "Have a Code" button) which is \$110.04; please enter this code [kit4444] to ensure that you purchase the correct Lab.

Course Description

This lab-only course is designed as a standalone addition to the General Chemistry course. Students will complete at home laboratory experiments, track and record results and take lab-based assessments to meet the lab requirement. The labs are provided by eScience Labs, a leading provider of at home lab kits and supplemental online materials. This course will give the student a solid foundation for further study into laboratory sciences.

Course Objectives

After completing this course, students will:

- Have a clear understanding of lab safety protocol
- Understand the scientific method and have experience applying it during laboratory experiments
- Recognize what makes a successful analysis
- Have conducted successful experiments
- Understand why molecules have a particular shape
- Understand and approximate the importance of Avogadro's Number
- Recognize balanced chemical equations
- Observe how a catalyst affects a reaction
- Understand how to appropriately draft a lab report
- Understand how to evaluate hypotheses in terms of data created by lab experiments

Course Prerequisites

There are no prerequisites to take General Chemistry Lab, though we highly recommend previous or concurrent enrollment in General Chemistry (CHEM101).

Important Terms and Tasks:

In this course, different terms are used to designate tasks:

- **Tutoring:** memberships include online tutoring for students to access with any content/subject related questions in the place of faculty. If your tutor is not able to answer your questions please contact a student advisor.
- **Labs:** These are experiments at home that you will complete and be assessed on through online exercises.
- **Lab Quiz:** A graded online test.

Completion of all tasks will help you succeed in this course. Quizzes and Labs are graded and contribute to your final grade.

Course Evaluation Criteria

A passing percentage is **70%** or higher. There are a total of 1000 points in the course:

Lab	Assessment	Points
	Upload Lab Kit Photos	40
1	Lab: Introduction and Laboratory Safety	85
1	Lab Exam: Introduction and Laboratory Safety	35
2	Lab: The Scientific Method	85
2	Lab Exam: The Scientific Method	35
3	Lab: Data Analysis and Graphing	85
3	Lab Exam: Data Analysis and Graphing	35
4	Lab: Molar Mass	85
4	Lab Exam: Molar Mass	35
5	Lab: Electron Configuration	85
5	Lab Exam: Electron Configuration	35
6	Lab: Molecular Geometry: The VSEPR Model	85
6	Lab Exam: Molecular Geometry: The VSEPR Model	35
7	Lab: Evaluating Precipitation Reactions	85
7	Lab Exam: Evaluating Precipitation Reactions	35
8	Lab: Using the Ideal Gas Law	85
8	Lab Exam: Using the Ideal Gas Law	35
Total		1000

Course Topics and Objectives

Lab	Title	Objectives
1	Lab: Introduction and Laboratory Safety	<ul style="list-style-type: none"> Understand the importance of safety in the chemistry laboratory Learn the chemistry safety rules Understand what to do in case of a chemistry laboratory accident Demonstrate the safety rules by creating a safe chemistry laboratory environment
2	Lab: The Scientific Method	<ul style="list-style-type: none"> Demonstrate how to safely and effectively conduct independent laboratory experiments Distinguish between statements that are testable by science and those that are not Write a testable hypothesis Carry out a controlled, repeatable,

		experiment to test the hypothesis
3	Lab: Data Analysis and Graphing	<ul style="list-style-type: none"> • Collect measurement data such as mass, volume, and density, using the most appropriate tools • Demonstrate the impact of unit conversions and significant figures during data analysis • Review data and construct corresponding graphs • Apply the scientific method to determine what happens to a gummy candy after soaking in water
4	Lab: Molar Mass	<ul style="list-style-type: none"> • Identify and understand the relevance of Avogadro's number • Experimentally determine the grams of a substance and convert to moles
5	Lab: Electron Configuration	<ul style="list-style-type: none"> • Identify elements using a flame test • Determine the electron configuration of known elements • Apply the concepts of quantized atomic energy • Interpret the relationship between color and wavelength
6	Lab: Molecular Geometry: The VSEPR Model	<ul style="list-style-type: none"> • Draw Lewis Dot Structures of main group elements • Predict the geometries of simple polyatomic molecules using the VSEPR bonding theory • Draw sketches of molecules using the correct geometric angles for bonds
7	Lab: Evaluating Precipitation Reactions	<ul style="list-style-type: none"> • Identify the solid that forms in a precipitation reaction • Calculate the theoretical, actual, and percent yield from the precipitation reaction
8	Lab: Using the Ideal Gas Law	<ul style="list-style-type: none"> • Determine the relationship between pressure and temperature • Understand how to use Charles's Law • Understand how to use the Ideal Gas Law